REMARKS

Claims 1-20 were previously pending in this patent application.

Claims 1-20 stand rejected. Herein, Claims 1, 8, 12, and 17 have been

amended. Accordingly, after this Amendment and Response After Final

Action and Advisory Action, Claims 1-20 remain pending in this patent

application. Further examination and reconsideration in view of the claims,

remarks, and arguments set forth below is respectfully requested.

DRAWINGS

Figures 1-3F are objected to because they are informal. Herein,

eight replacement sheets with corrected Figures 1-3F are being submitted to

replace the original sheets having Figures 1-3F. No new matter was added.

Withdrawal of the objection to Figures 1-3F is respectfully requested.

SPECIFICATION

According to the Final Office Action, no marked-up copy of the

specification reflecting the amendment mailed 11/17/04 has been provided

by Applicant. In a telephonic interview on 5/24/2005 between the Examiner

Baker and Jose S. Garcia (Reg. # 43,628), representing the Applicant, the

Examiner determined that a marked-up copy of the specification reflecting the amendment mailed 11/17/04 had been provided by Applicant.

35 U.S.C. Section 112, Second Paragraph Rejections

Claims 1-20 stand rejected under 35 U.S.C. Section 112, Second Paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, it was stated that Independent Claims 1, 8, 12, and 17 include the recitation "directly" but is not supported by the specification as filed. Herein, although Applicant respectfully disagrees that the recitation "directly" is not supported by the specification, the term "directly" has been deleted from Independent Claims 1, 8, 12, and 17. It is respectfully requested that the rejection under 35 U.S.C. Section 112, Second Paragraph, against Claims 1-20 be withdrawn.

35 U.S.C. Section 103(a) Rejections

Claims 1-4, 7-9, 12-13, and 16-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parks et al., U.S. Patent No. 6,598,174 (hereafter Parks) in view of Official Notice. These rejections are respectfully traversed.

Independent Claim 1 recites (as amended):

A method of hot swapping memory, comprising:

a)   providing a spare memory bank in a memory system, wherein said memory system includes a plurality of memory banks such that a memory word is divided into said memory banks;

b)   selecting one of said memory banks to replace;

c)   configuring said memory system to perform write operations associated with said selected memory bank to both said selected memory bank and said spare memory bank;

d)   performing atomic read and write operations such that content of said selected memory bank is copied from said selected memory bank to said spare memory bank *without reading from and writing to an intermediate memory buffer*, and

e)   configuring said memory system to redirect operations to be performed on said selected memory bank to said spare memory bank such that said selected memory bank can be hot replaced. (emphasis added)

In the Advisory Action, it was stated that, "the claimed copying of data from one memory to another memory does not preclude using an intermediate buffer". As amended, Claim 1 recites the limitation "is copied from said selected memory bank to said spare memory bank *without reading from and writing to an intermediate memory buffer*," (emphasis added). Thus, Claim 1 precludes "using an intermediate buffer" to copy the content of one memory to another memory.

It is respectfully asserted that there is no suggestion, motivation, or teaching found in the cited references (Parks and Official Notice) to combine them. Moreover, the combination of the cited references does not teach, suggest, or motivate all the limitations in Independent Claim 1.

Furthermore, Independent Claim 1 recites the limitation, "performing atomic read and write operations such that content of said selected memory bank is copied from said selected memory bank to said spare memory bank *without reading from and writing to an intermediate memory buffer,*" (emphasis added). In contrast, Parks discloses a method/process that facilitates protection of data in, and replacement of, storage devices about to fail before the failure happens. [Parks; Abstract]. In operation, if the condition indicated by the warning event is sufficient to invoke replacement of the storage unit, then the process determines whether a dedicated spare unit is available (box 301). [Parks; Figure 3; Col. 8, lines 40-52]. If a spare is available, then it is allocated (box 303). Id. The data on the storage unit causing the warning event is migrated to the allocated replacement unit (box 304). Id.

Further, Parks states that the data migration is executed by an intelligent network server and utilizes an intermediate device (501). [Parks; Figures 5A, 5B, and 6; Col. 9, lines 24-67; Col. 16 lines 35-38]. The

intermediate device (501) includes memory for use as buffers. Id. Contents of the source storage device (511) are transferred through the intermediate device (501) into the destination storage device (521) by the intelligent network server. Id. That is, Parks teaches the use of an intermediate memory buffer to copy the content of one memory to another memory while in Independent Claim 1 the content of one memory bank is copied to another memory bank without reading from and writing to an intermediate memory buffer.

Additionally, Parks states that the intelligent network server starts data migration with allocation of a buffer in the intermediate device (box 1311) to support a block transfer. [Parks; Figures 10-13; Col. 17, line 58 through Col. 18, line 5]. A copy of a first block in the source storage device is moved to the buffer (box 1312 and box 1313) by the intelligent network server. Id. Next, the block is moved from the buffer to the destination storage device (box 1314 and box 1315) by the intelligent network server. Id. That is, Parks is directed to a first stage in which copying/moving the content of the source storage device to the intermediate device (501) is performed by an intelligent network server, and a second stage in which copying/moving the content from the intermediate device (501) to the destination storage device is performed by the intelligent network server. Further, the intelligent network server may have to read the copied data into

itself and write the copied data from itself for the first stage and the second stage.

However, Parks <u>fails</u> to disclose performing atomic read and write operations such that content of the selected memory bank is <u>copied from the selected memory bank to the spare memory bank without reading from and writing to an intermediate memory buffer</u>, as in the invention of Independent Claim 1. Park <u>teaches away</u> from the invention of Independent Claim 1 by disclosing that the content of the selected memory is copied from the selected memory to an intermediate buffer memory and then the content of the intermediate buffer memory is copied from the intermediate buffer memory to the spare memory.

Moreover, it is admitted in the Final Office Action at page 4 that Parks does not describe the semiconductor storage devices as "memory banks". Official Notice is taken that the usefulness of providing a semiconductor device unit in the form of a "bank" was well known at the time the invention was made. This Official Notice is respectfully traversed. It was <u>not well known</u> in the art at the time the invention was made the usefulness of providing a semiconductor device unit in the form of a "bank", as in the invention of Independent Claim 1. Therefore, it is respectfully submitted that

Independent Claim 1 is patentable over the combination of Parks and the Official Notice and is in condition for allowance.

Dependent Claims 2-4 and 7 are dependent on allowable Independent Claim 1, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claims 2-4 and 7 are patentable over the combination of Parks and the Official Notice for the reasons discussed above.

With respect to Independent Claim 8, it is respectfully submitted that Independent Claim 8 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 8 is directed to a circuit. The circuit comprises a repeater coupled to a plurality of memory banks such that a memory word is divided into the memory banks and coupled to a spare memory bank. The repeater directs write operations to be performed on a selected memory bank to both the selected memory bank and the spare memory bank. After <u>atomic read and write operations are performed</u> such that <u>content of the selected memory bank is copied from the selected memory bank to the spare memory bank without reading from and writing to an intermediate memory buffer</u>, the repeater redirects operations to be performed on the selected memory bank to the spare memory bank such

that the selected memory bank can be hot replaced. Therefore, Independent Claim 8 is allowable over the combination of Parks and the Official Notice for reasons discussed in connection with Independent Claim 1.

Dependent Claim 9 is dependent on allowable Independent Claim 8, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claim 9 is patentable over Parks and the Official Notice for the reasons discussed above.

With respect to Independent Claim 12, it is respectfully submitted that Independent Claim 12 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 12 recites a memory system comprising a plurality of memory banks such that a memory word is divided into the memory banks; and a spare memory bank. Write operations associated with a selected memory bank are directed to both the selected memory bank and the spare memory bank, wherein <u>atomic read and write operations are performed</u> such that <u>content of the selected memory bank is copied from the selected memory bank to the spare memory bank without reading from and writing to an intermediate memory buffer</u>. Operations to be performed on the selected memory bank are redirected to the spare memory bank

such that the selected memory bank can be hot replaced. Therefore, Independent Claim 12 is allowable over the combination of Parks and the Official Notice for reasons discussed in connection with Independent Claim 1.

Dependent Claims 13 and 16 are dependent on allowable Independent Claim 12, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claims 13 and 16 are patentable over the combination of Parks and the Official Notice for the reasons discussed above.

With respect to Independent Claim 17, it is respectfully submitted that Independent Claim 17 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 17 recites a computer system comprising a memory system including a plurality of memory banks such that a memory word is divided into the memory banks, a spare memory bank, and a repeater coupled to the memory banks and the spare memory bank. Write operations associated with a selected memory bank are directed to both the selected memory bank and the spare memory bank, wherein <u>atomic read and write operations are performed</u> such that <u>content of the selected memory bank is copied from the selected memory bank to the spare</u>

memory bank without reading from and writing to an intermediate memory buffer. Operations to be performed on the selected memory bank are redirected to the spare memory bank such that the selected memory bank can be hot replaced. Therefore, Independent Claim 17 is allowable over the combination of Parks and the Official Notice for reasons discussed in connection with Independent Claim 1.

Dependent Claim 18 is dependent on allowable Independent Claim 17, which is allowable over the combination of Parks and the Official Notice. Hence, it is respectfully submitted that Dependent Claim 18 is patentable over the combination of Parks and the Official Notice for the reasons discussed above.

Claims 2, 10, 14, and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parks et al., U.S. Patent No. 6,598,174 (hereafter Parks) in view of Official Notice, and further in view of Ohizumi, U.S. Patent No. 5,357,509 (hereafter Ohizumi). These rejections are respectfully traversed.

Dependent Claim 2, Dependent Claim 10, Dependent Claim 14, and Dependent Claim 19 are dependent on allowable Independent Claims 1, 8,

12, and 17 respectively, which are allowable over the combination of Parks and the Official Notice. Moreover, Ohizumi does not disclose <u>performing atomic read and write operations</u> such that <u>content</u> of the selected memory bank is <u>copied from the selected memory bank to the spare memory bank without reading from and writing to an intermediate memory buffer</u>, as in the inventions of Independent Claims 1, 8, 12, and 17. On the contrary, Ohizumi is directed to <u>generating restored data from data stored in remaining functioning disks</u>, writing the restored data to the spare disk storage, and copying the restored data to a new disk storage, which has replaced the faulty disk. Therefore, Independent Claims 1, 8, 12, and 17 are patentable over the combination of Parks, the Official Notice, and Ohizumi for the reasons discussed above. Hence, it is respectfully submitted that Dependent Claims 2, 10, 14, and 19 are patentable over the combination of Parks, the Official Notice, and Ohizumi for the reasons discussed above.

ALLOWABLE SUBJECT MATTER

Claims 3-6, Claim 11, Claim 15, and Claim 20 would be allowable if rewritten to overcome the rejections under 35 U.S.C. Section 112, Second Paragraph, and to include all of the limitations of the base claim and any intervening claims.

Claims 3-6, Claim 11, Claim 15, and Claim 20 are dependent on allowable Independent Claims 1, 8, 12, and 17 respectively, which are allowable. Hence, it is respectfully submitted that Dependent Claims 3-6, 11, 15, and 20 are patentable.

CONCLUSION

It is respectfully submitted that the above arguments and remarks overcome all rejections. All remaining claims (Claims 1-20) are neither anticipated nor obvious in view of the cited references. For at least the above-presented reasons, it is respectfully submitted that all remaining claims (Claims 1-20) are in condition for allowance.
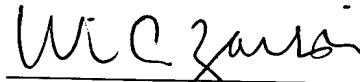
The Examiner is urged to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to Hewlett-Packard's PTO deposit account number: 08-2025.

Respectfully submitted,

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Dated: _8|3|05_

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